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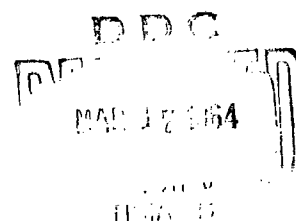CAMERON STATION, ALEXANDRIA, VIRGINIA

PERSONAL HISTORY CORRELATES OF

PERFORMANCE AMONG MILITARY PERSONNEL

IN SMALL ANTARCTIC STATIONS

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Personal History Correlates of Performance

Among Military Personnel in Small Antarctic Stations

by

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Introduction

A man's past life experiences, whether expressed in the form of successes and failures or in terms of a more general socio-cultural context, are often regarded as a fruitful source from which to predict future behavior or, in retrospect, to provide insight into some behavior already observed. Whether one's orientation towards personal history data is predominantly pragmatic, as in the selection of men for jobs (Dunnette, 1962), or somewhat theoretical (Dailey, 1960), personal history data are invariably inspected in human assessment programs. They can be obtained with relative ease and reliability and they often provide information of seemingly patent validity.

In the present study personal history data have been analyzed in relation to performance criterion measures obtained on military personnel who had wintered-over at scientific stations in the Antarctic. During each of the past three years, from fifteen to thirty-five men, including both civilian scientific and military support personnel, have worked and lived together for twelve continuous months at each of three small stations. The present analysis pertains only to the military complement at each station whose primary responsibility was that of providing logistic support for the scientific operations. Since the job requirements, background, and screening situations are considered to be somewhat different for the military and civilian groups, it was considered best to analyze the two groups separately.

Method

Subjects

The Ss in the present study were sixty-four (N = 64) Navy enlisted men each of whom had spent one year at an Antarctic station during one of the past three years.[1] The men were of an average age of 27 years with an average of eight years active duty experience. The average level of formal education for the Ss was 11.4 years. Except for their being slightly more experienced, the men who wintered-over at the small stations were not appreciably different in biographical characteristics from the total sample of Antarctic candidates from comparable occupational groups.

Performance Criteria

A discussion of the development of performance measures has been presented in another paper (Nelson and Gunderson, 1963). Briefly, four criteria were used in the present study, these being 1) a preference expressed by station peers and supervisors to return with a man, 2) a social compatibility measure, 3) an emotional composure score based upon the concepts of self control and acceptance of authority, and 4) a task performance measure based upon ratings of industriousness and motivation. The criteria were available in the form of standard scores having been derived from the T-score distribution (Mean = 50, SD = 10). Over the population on which the criteria were developed, the social,

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[1]Personal history data were not available for eleven additional military personnel who had also wintered-over in the Antarctic during this time.

emotional, and task criterion scores had a median intercorrelation of .52 (SE =
.08) and yielded a multiple correlation of .89 with the more general criterion
of wanting to return with a man.

Personal History Data

At the time of psychiatric screening, approximately two years prior to the
completion of a year's tour in the Antarctic, each of the applicants completed
the Standard Psychodiagnostic Record Booklet, an inventory designed to elicit
information about a man's present status and interests as well as his family,
educational, and vocational experiences.[2] Approximately thirty items were
selected from the inventory for the present study, items considered to be of
major importance in summarizing a man's life history. As a practical matter,
items on which there was little or no response variance and items for which
there was much missing information were discarded. An attempt was also made to
include the types of items which have been of interest in other studies per-
taining to the predictive validity of personal history data. The items selected
for study are those which appear in Table 1 (Appendix).

In addition to the individual items of personal history, several constructs
were developed from clusters of positively related items. A reading score was
formed, for example, on the basis of the frequency with which the individual
read both books and magazines. A more general activities index score was
developed on the basis of an individual's participation in sports, clubs,
hobbies, and reading activities. A delinquency-truancy index was constructed
from items pertaining to arrests, being expelled, running away from home, and
playing frequent hooky from school. An individual with a record of non-traffic
arrests or having been expelled from school was placed in the delinquent
category; the individual without a record of arrest or having been expelled but
who ran away from home as an adolescent or played frequent hooky was placed in
the truant category; and an individual with neither of the above was placed in a
third category. Finally, a family socioeconomic status (SES) index was developed
from father's occupation, father's education, and mother's education. The same
bits of information were used by Srole et al (1962) to estimate socioeconomic
status in a study of a metropolitan area. In the present instance, the father's
occupation was trichotomized into white collar, skilled labor or farming, and
the unskilled or unknown. Parents' education was broken into categories of high
school graduate, incomplete high school, and no high school. A simple sum score
of the three trichotomized variables was then obtained.

Methods of Analysis

Due to the fact that the personal history items varied in their scalar
properties, the chi square statistic was selected as a common method for
analyzing the relationships of all items with the criteria. Whenever possible
and at all meaningful to do so, the personal history data were coded into
trichotomies so as to allow for the detection of possible non-linear relation-
ships and at the same time maximize the sample size within response categories
as much as possible. In forming trichotomies the psychological meaning of the
categories was considered as well as the empirical distribution of responses.
In years of service, for example, the categories correspond roughly to career
stages but do not yield equal thirds in sample size. The criteria scores were

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[2]Standard Psychodiagnostic Record Booklet was developed by Staff,
Medicopsychological Research Corp.

dichotomized in the final analysis. They too were initially trichotomized but the results obtained from such analyses provided no additional information to that rendered by the use of dichotomies.

Since the primary goal of the present study was not so much to derive a best possible multiple correlation, as it was to gain insight into the types of personal history concepts which seem to be related to performance in the Antarctic, the use of chi square seemed adequate as a common method of analysis.

Results

A summary of the relationships of personal history attributes with the four criteria is presented in Table 1 (Appendix). The results are shown in the form of percentages of Ss within each personal history category who were above the median within each of the four criterion groups. A separate analysis was conducted for each criterion since an individual could be in the upper half on one criterion but not on another. The chi square analyses were of course performed on the frequency data from which the percentages were derived with both the upper and lower halves of Ss on each criterion group being included in such analyses. Table 1 contains the levels of significance associated with the chi square results for all values of $p \leq .10$.

It is apparent from the results that items differ from one another in terms of the general pattern of their relationships with the four criteria. Some items, such as age, show a positive linear relationship with all four criteria, even though the significance levels are not all the same. Other items, such as rate, display a tendency to vary in both direction and quality (linearity) of relationship with the four different criteria. Obviously, to approach a set of such information with a simple linear concept of relationships in mind would be a mistake. It also seems evident that if the assumed general criterion of return with had been used as the only criterion in evaluating the predictive validity of the personal history items several of the significant relationships would not have been obtained. Furthermore, the qualitative relevance of the various personal history items would not have been revealed. That is, one would not have known the particular facet of performance with which an item was related nor in what way.

Three concepts might be used to summarize the significant relationships and insignificant trends found in Table 1, these being experience, activity level, and history of delinquency.

The concept of experience includes age, rate, length of service, and combat or previous cold weather duty. Of these, only age bears a significant relationship to a criterion measure with the other variables showing generally supporting trends. The facet of performance for which experience appears most important is that of emotional composure with its elements of self control and positive regard for authority. Task performance is also systematically related to the same items in a positive direction.

The concept of activity level refers to the manifest need for personal activity as indicated by having hobbies, frequent reading of books and magazines, belonging to clubs, and participating in many sports. Of these, only the reading score and hobbies item have significant relationships with any of the criteria. These specific items, as well as the overall activities index score, appear most related to the social aspects of performance with persons high on activity level being low on the social criterion. One hypothesis might be that individuals who are extremely self sufficient and busy with personal activity needs are somewhat less skilled in social intercourse than persons who are not so intensely involved in personal activities. Another possible hypothesis, although not necessarily of relevance only for the social criterion is that persons high on activity level are able to find neither the number nor variety of sources of gratification in the Antarctic setting.

The concept of delinquency is represented by a composite of items pertaining to arrests, being expelled, and displaying truant behavior as an

adolescent. While statistically independent of age, the delinquency-truancy index is also most related to the criterion of emotional composure and, in addition, to the task performance criterion. In relation to all but the emotional composure criterion, the individual with a truant record, but not delinquent in the sense of having been expelled or arrested, was judged to be as effective as the individual without either a truant or delinquent history. Upon more detailed analysis, breaking the Ss into upper and lower groups on age, this result was most apparent for the older more experienced group of Ss. The implication, then, is that if an individual was truant as an adolescent, but has since applied himself successfully over several years, his present on-the-job status is probably more indicative of his motivation than his behavior as an adolescent.

To the extent that family background variables are related to any of the criteria, middle or lower socioeconomic status (SES) appears more favorable than higher SES. For the present Ss it is suspected that the range of SES is roughly that of the conventional lower through middle class categories. There is some confounding of variables in this relationship since age, delinquent history, and activities level are all related to family SES to some extent and in the direction opposite to that of their respective relationships with the criteria. Age, for example, correlates positively with the criteria and negatively with family SES. As for the predictive validity of items pertaining to region of childhood residence, a popular item in studies of extreme climatic environments, the results of the present study are not in contradiction to that stereotype of American culture which suggests that New Englanders are industrious and that the farther west one goes the friendlier people get!

In a final analysis, Ss were classified into two general occupational groupings, technician and non-technician types, and also within each occupational grouping were divided into upper and lower halves on age. With the resulting four groups separate analyses were again run with the four criteria using chi square or Fisher's exact probability test, as appropriate. The thought had been that there may be differential relationships for different age and/or occupational groups. No additional information was yielded by these analyses.

Discussion

Biographical or personal history data have frequently been studied as possible predictors of performance among military personnel. Among the diverse settings in which such studies have occurred are military academies (Hausman et al, 1959), officer candidate programs (Rohrer, Bagby, and Wilkins, 1952), flight training programs (Nelson, 1958), and prisoner of war camps (Segal, 1956). Due to the variations in populations studied, the behavioral requirements for adaptation to the different environmental settings, and to the criterion measures used to evaluate performance, it is difficult to compare the specific results of the various studies.

Two previous studies of Antarctic station personnel are perhaps closest in scope to the present study (McGuire and Tolchin, 1961; Weybrew, Molish, and Youniss, 1961). In those studies both military and civilian station members were included and station size varied from seventeen men in one group to close to one hundred in the other. Although fewer personal history attributes were analyzed in those studies, the one common finding, significantly related to various criteria in the three studies, was that age is positively correlated with adjustment; men under twenty-five years of age were less likely to be effective in each case. The remaining findings of the present study, whether significant or simply trends, can perhaps shed further light on the implications of this common finding.

It is apparent first of all that age is generally associated with the concept of maturity. Age is generally accompanied by greater perspective attained through the course of life experiences. In the military population

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personnel over thirty years of age have for the most part had more than ten years of active duty and have more than likely experienced a variety of types of duty situations, including combat and other stressful situations. Even ignoring the fact of their advancement in rate through the years, the fact that these more senior personnel have survived the problems encountered in ten or more years of duty suggests that they have been relatively effective to date. This is particularly evident when one considers the possible avenues of attrition such as being discharged, hospitalized, or confined.

What seems appropriate is an orientation similar to that maintained by Ginzberg et al (1959) in their study of World War II soldiers. The focus of that study was upon the continuities and discontinuities of performance through an individual's life history. Applying such an orientation to the present findings, it appears quite meaningful that older more experienced men who have selected a Navy career and have successfully served for more than ten years without major disciplinary difficulties would be able to cope with the problems of Antarctic station life. In light of Ginzberg's concept of discontinuity, it is interesting that older individuals in the present study who were truant as adolescents, but have had no major disciplinary problems over several subsequent years of duty were effective individuals by most of the present criterion standards.

In order to most adequately evaluate the patterns of life performance for an individual it would seem necessary to control the effects of at least two variables, one being the age group of the individual and the other being some index of the social and cultural background from which the individual developed. Each of these two variables might be of value, for example, in interpreting the significance of level of education attained, types of activities valued, or simply the ability to hold a job over a period of several years. While some attempt was made in the present study to analyze the data for different age groups and groups of different family background, the small sample size made such analyses rather unrewarding.

In conclusion, the best correlates of performance among military personnel at small Antarctic stations seem to be age, years of service, absence of a history of delinquency, and relatively low need for personal activities of an avocational nature. Further studies will be carried out to cross-validate the present results.

Summary

Personal history data were evaluated in relation to performance criterion measures for sixty-four Navy personnel each of whom had spent one year at an Antarctic scientific station. The four criteria included an evaluation of the man's social compatibility, emotional composure, and task efforts.

As in previous studies of Antarctic station personnel, age was significantly related to performance. In the present study it was particularly related, in a positive direction, to emotional composure. Associated with age, but not significantly related to the criteria as individual items, were years of experience, previous stressful duty assignments, and advancement in rate.

A second set of results centered about the concept of personal activities of an avocational nature. Individuals who were relatively heavy readers, had several hobbies, were active in sports, and belonged to various clubs were considered to be active individuals. Such activity, particularly for self-oriented activity such as reading and hobbies, was negatively related to social compatibility.

The third major finding was that individuals with a past history of delinquent behavior tended to perform less well than those without such a history. Individuals with a record of non-traffic arrest or having been expelled from school were lowest on criterion scores reflecting emotional composure and task industriousness. Having been truant as an adolescent was more related to

below average performance among the younger than it was among the older personnel. The latter finding suggested the importance of a recency interpretation to personal history data; that is, the significance of what an individual has done in the past must be weighed in part by the time lapse and what the individual has accomplished since that earlier event.

The effective military man in the Antarctic is more than likely the individual who has been effective in other duty assignments. He had developed a sense of self control, respect for others, and a desire to get a job done well.

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TABLE 1

Percentages of Military Personnel from Different Personal History Attribute
Categories Who Had Scores Above the Median on Any of Four Criteria[a]

Performance Criteria[b]

Characteristics	n	Return With	Social	Emotional	Task
		%	%	%	%
Age					
≥ 31	21	61.9	61.9	66.6	61.9
25-30	17	52.9	47.0	47.0	52.9
≤ 24	26	38.5	38.5	30.8	42.3
X^2 (p)		n.s.	n.s.	.05	n.s.
Rate					
$\geq 1/c$ Petty Officer	23	43.5	47.8	60.8	56.5
2/c Petty Officer	21	57.1	47.6	33.3	57.1
$\leq 3/c$ Petty Officer	20	50.0	50.0	45.0	40.0
X^2 (p)		n.s.	n.s.	n.s.	n.s.
Years of Service					
≥ 8 years	28	57.1	57.1	57.1	60.7
4-7 years	24	41.7	41.7	41.7	45.8
≤ 3 years	12	50.0	41.7	33.3	41.7
X^2 (p)		n.s.	n.s.	n.s.	n.s.
Foreign Duty Experience					
Combat	14	50.0	57.1	57.1	64.3
Cold Weather/No Combat	16	56.2	56.2	43.8	50.0
Neither	34	47.0	41.2	44.1	47.0
X^2 (p)		n.s.	n.s.	n.s.	n.s.
Presently Married					
Yes	27	44.4	40.7	44.4	44.4
No	37	54.0	54.0	48.6	56.7
X^2 (p)		n.s.	n.s.	n.s.	n.s.

[a]As an illustration, 66.6% of the men who were ≥ 31 years old were above the median on the emotional criterion score.

[b]On the Return, Social, Emotional, and Task Criteria the sample size above the median was $N = 32, 41, 30,$ and 33 respectively.

		Performance Criteria			
Characteristics	$\underline{n}$	Return With	Social	Emotional	Task
		%	%	%	%
Worship					
≥ Monthly	19	52.6	42.1	57.9	57.0
< Monthly	33	45.4	42.4	33.3	48.5
None	12	48.3	75.0	66.7	50.0
x^2 (p)		n.s.	n.s.	.10	n.s.
Club Member					
Yes	23	47.8	47.8	43.5	47.8
No	41	51.2	48.8	48.8	53.6
x^2 (p)		n.s.	n.s.	n.s.	n.s.
Hobbies					
≥ 2	12	25.0	16.7	33.3	75.0
One	39	48.7	51.3	43.6	46.2
None	13	76.9	69.2	69.2	46.2
x^2 (p)		.05	.05	n.s.	n.s.
Reads					
Frequently	16	25.0	37.5	25.0	43.8
Occasionally	34	55.9	44.1	55.9	47.0
Seldom	14	64.3	71.4	50.0	71.4
x^2 (p)		.10	n.s.	n.s.	n.s.
Sports Participation					
High	15	40.0	33.3	40.0	40.0
Medium	36	52.8	47.2	47.2	50.0
Low	13	53.8	69.2	53.8	69.2
x^2 (p)		n.s.	n.s.	n.s.	n.s.
Activities					
High	15	33.3	26.7	40.0	40.0
Medium	29	48.3	44.8	37.9	44.8
Low	20	65.0	70.0	65.0	70.0
x^2 (p)		n.s.	.05	n.s.	n.s.

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Characteristics	$\underline{n}$	Return With %	Social %	Emotional %	Task %
Delinquency-Truancy					
Non-Traffic Arrest/Expelled	20	40.0	40.0	25.0	25.0
Frequent Hooky/Ran Away	18	55.6	66.7	44.4	61.1
None of the Above	26	53.8	42.3	65.4	65.4
x^2 (p)		n.s.	n.s.	.05	.02
Region of Childhood Residence					
Northeast	14	57.1	28.6	50.0	78.6
North Central	16	43.8	37.5	43.8	37.5
South	19	57.9	57.9	42.1	47.4
West	15	40.0	66.7	53.3	40.0
x^2 (p)		n.s.	n.s.	n.s.	n.s.
Community of Childhood Residence					
≥25,000 population	17	58.7	47.0	64.7	58.8
Small Town	24	45.8	54.2	45.8	45.8
Rural	23	47.8	43.5	34.8	52.2
x^2 (p)		n.s.	n.s.	n.s.	n.s.
Family Moved During Childhood					
Yes	21	52.4	47.6	47.6	47.6
No	43	48.8	48.8	46.5	53.5
x^2 (p)		n.s.	n.s.	n.s.	n.s.
Generation					
≤2nd	15	66.7	40.0	46.7	60.0
≥3rd	49	44.9	51.0	46.9	49.0
x^2 (p)		n.s.	n.s.	n.s.	n.s.
Family Size					
≥6 children	18	38.9	55.6	61.1	55.6
3-5 children	28	53.6	53.6	42.8	57.1
≤2 children	18	55.6	33.3	38.9	38.9
x^2 (p)		n.s.	n.s.	n.s.	n.s.

Characteristics	$\underline{n}$	Return With %	Social %	Emotional %	Task %
Father's Occupation					
White Collar	6	16.7	16.7	16.7	16.7
Skilled/Farm	43	53.5	44.2	53.5	51.2
Unskilled	15	53.3	73.3	40.0	66.7
x^2 (p)		n.s.	.05	n.s.	n.s.
Mother Worked					
Yes	13	46.2	53.8	53.8	38.5
No	51	51.0	47.0	47.0	54.9
x^2 (p)		n.s.	n.s.	n.s.	n.s.
Father's Education					
$\geq$12 years	12	33.3	50.0	41.7	58.3
9-11 years	16	56.2	37.5	37.5	43.8
$\leq$8 years	36	52.8	52.8	52.8	52.8
x^2 (p)		n.s.	n.s.	n.s.	n.s.
Mother's Education					
$\geq$12 years	23	39.1	43.5	39.1	43.5
9-11 years	21	52.4	47.6	52.4	52.4
$\leq$8 years	20	60.0	55.0	50.0	60.0
x^2 (p)		n.s.	n.s.	n.s.	n.s.
Family S.E.S.					
High	18	22.2	33.3	27.8	38.9
Medium	27	66.6	59.2	59.2	55.5
Low	19	52.6	47.4	47.4	57.9
x^2 (p)		.02	n.s.	n.s.	n.s.
Both Parents Worship					
$\geq$-Monthly	14	21.4	21.4	35.7	21.4
$\leq$-Monthly	50	58.0	56.0	50.0	60.0
x^2 (p)		.05	.05	n.s.	.05

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Characteristics	$\underline{n}$	Return With %	Social %	Emotional %	Task %
Parents Separated/Divorced					
Yes	17	58.8	52.9	47.0	41.2
No	47	46.8	46.8	46.8	55.3
x^2 (p)		n.s.	n.s.	n.s.	n.s.
Most Influential Parent					
Father	18	61.1	50.0	55.5	55.5
Mother	16	50.0	43.8	50.0	37.5
Both	30	43.3	50.0	40.0	56.7
x^2 (p)		n.s.	n.s.	n.s.	n.s.

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